

Vol. 11

TAMPA, FLORIDA, MARCH, 1930

No. 3

Culture of Citrus Fruits In The Gulf States

By E. D. Vosbury, Formerly Scientific Assistant, Office of Horticulture, and T. Ralph Robinson, Physiologist, Office of Horticultural Crops and Diseases, Bureau of Plant Industry

Scope of Work

There is an increasing demand, especially on the part of new-comers and prospective growers, for information concerning citrus-fruit growing in the Gulf States. While it is not feasible in this bulletin to give complete information regarding such a complex industry as modern citrus culture, it will be of value to outline some of the general principles as a guide to those interested.

As Florida produces by far the most citrus fruits of all the States under consideration, a more complete discussion is given of the industry in that State than for the other sections. Much of the information relative to Florida, however, will be applicable to the other Gulf States as well. Whenever marked differences in methods exist, each locality is considered separately.

History of Florida Citrus Industry

Oranges, grapefruit, and other citrus fruits were first brought to the United States by the Spaniards, who planted them in Florida more than three centuries ago. Prior to 1870 the commercial citrus crop of Florida was limited to the output of a few small groves in the northern part of the State. Most of the groves were situated along the banks of the St. Johns and other rivers, as practically the sole means of transportation was by river boats. The methods of culture, harvesting, and shipping were

very crude, but in spite of many handicaps the pioneer growers prospered, and after the advent of the railroad lines in the early sixties the industry grew very rapidly. Most of these early plantings were of orange trees. Grapefruit culture was neglected, and the fruit had little market value until the late eighties, when it began to grow very rapidly in favor, until at the present time the grapefruit is becoming a close rival to the orange in commercial importance.

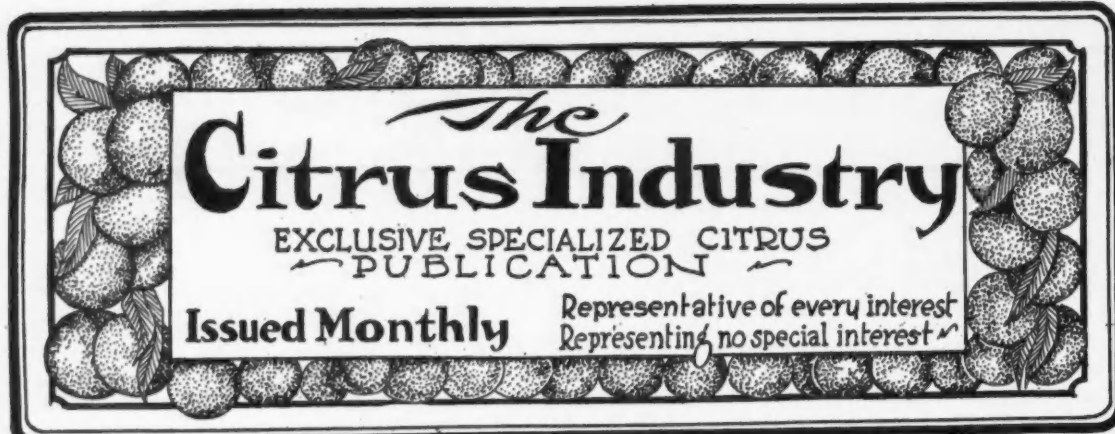
The first severe freeze recorded was in 1835, when orange trees from 40 to 50 years old were killed at St. Augustine and Mandarin. No freeze since that time has been so severe.

The second serious check to the growth of the industry occurred in 1886, when a severe freeze ruined most of the orange crop and killed many young trees. In the winter of 1894-95 two disastrous freezes killed most of the trees to the ground and ruined thousands of groves. In 1899 another killing freeze occurred. As a result of these costly experiences much of the old northern citrus area was abandoned permanently and the industry was relocated in southern and central Florida. From that date citrus production in Florida increased without any serious check until 1917, when a freeze in February killed to the ground in many sections most of the young trees, frost-

ed most of the crop remaining on the trees at the time, and in some sections cut back the bearing trees severely.

Although the citrus industry has fully recovered from these disasters, the various freezes have taught the growers many valuable though costly lessons. The importance of selecting grove sites that are relatively free from frosts has been strongly emphasized, and the advisability of protecting groves by some means of orchard heating has been demonstrated, particularly in those sections where killing frosts have been experienced. The importance of crop diversity has also been recognized, and in sections where soil conditions permit, truck crops and staple farm crops are receiving more attention.

One-crop farming at best is a gamble, and in case of a severe freeze the man with a number of staple farm crops is much better prepared to weather the lean years than the grower who has oranges only. Furthermore, in diversified farming the labor, horses, and equipment are more efficiently and economically employed through the year than where nothing but a citrus crop is produced. This applies especially to the northern limits of citrus growing and the Satsuma orange sections of the Gulf coast. Exception may be noted in the case of citrus regions particularly well located for frost pro-



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tection and where soil conditions, as in the sandy-ridge section of Florida, are not favorable to crop diversity.

As a result of these experiences the Florida citrus industry is now on a more stable basis than at any time in the past. Great improvements have been made in cultural methods and in the control of insects and diseases. The introduction of modern methods of harvesting, packing, and shipping has stimulated both production and demand by enabling the fruit to be shipped to the most distant markets with a minimum loss from decay.

Four distinct citrus-growing sections of Florida have been outlined as follows:

Northwestern Florida, that part of the State lying west of the Aucilla River; eastern Florida, that part between the Aucilla River and a straight line drawn from the mouth of the St. Johns River to Cedar Keys; central Florida, that part of the State between the line referred to above and north of the counties constituting southern Florida; southern Florida, the northern line of which division is marked by the northern boundaries of Manatee, Hardee, Highlands, Okeechobee, and Brevard Counties.

By far the greater portion of the citrus fruits are produced in the central and southern sections of Florida. In the western and eastern sections of northern Florida the citrus industry is of relatively minor importance, although there are a number of small groves, and in the northwestern part of the State plantings of Satsuma oranges have been made in recent years.

One of the most important factors in raising the standard of citrus growing in Florida has been the Florida Citrus Exchange, a non-profit, cooperative marketing organization which includes growers in all parts of the State. The Florida State Horticultural Society has also been a valuable agency in promoting the social and business relations of the citrus growers.

History of the Citrus Industry in the Other Gulf States

In a narrow area on either side of the Mississippi River south of New Orleans, in Louisiana, citrus fruits have been grown for many years. Both round oranges and Satsumas are successfully grown in the protected area along the river levee, and extensive new plantings have recently been made on land formerly devoted to sugarcane. Most of the crop is sold in the New Orleans market.

Extensive plantings of Satsuma oranges have been made in other sections of southern Louisiana. The

losses from killing frosts have been rather frequent, and only those plantings favorably situated for cold protection are likely to survive as profitable ventures.

The commercial culture of citrus fruits in Texas is now a major industry in the lower Rio Grande Valley, where about 50,000 acres are planted under irrigation, water being pumped from the Rio Grande River. Grapefruit constitutes about three-fourths of the present acreage, the remainder being about equally divided between oranges and lemons. Commercial shipments on a car-lot basis were commenced in 1921-22, reaching a total of about 2,000 carloads in the 1928-29 season. Fully 75 per cent of the area planted is still in the nonbearing stage.

Considerable loss has been experienced in the past from the freezing of young trees, and some form of frost protection is considered desirable. Owing to the tendency for seepage water from irrigation canals to accumulate in low spots with consequent water-logging and rise of alkali, many plantings on undrained locations have suffered. Furthermore, until storage systems for irrigation are developed to safeguard both the quantity and quality of the water available, it would seem hazardous to extend citrus planting further, particularly as the acreage of orchard crops can not be regulated to accommodate the supply of water, as with ordinary field crops.

In addition to the lower Rio Grande Valley, extensive plantings are under way in the Laredo-Winter Garden district, also under irrigation. More than 100,000 trees have been planted in this area in the last four years, oranges constituting about 75 per cent of the acreage. Only a very small percentage of these trees are in bearing, so that no figures on production are available.

Satsuma oranges and other citrus fruits were at one time extensively planted along the northern Gulf coast section of Texas, particularly in the vicinity of Houston and Beaumont. Many of these plantings were repeatedly killed back by cold, and in the winter of 1916-17 thousands of acres of citrus groves were frozen to the ground and abandoned. On account of unfavorable climatic conditions and other factors, as pointed out by the United States Department of Agriculture in past reports, the Gulf coast of Texas is not in general a promising section for the profitable and conservative development of an extensive citrus industry. Further plantings north of the Rio Grande Valley should be limited to small

groves of the hardier sorts of citrus fruits, such as Satsuma oranges and kumquats, planted in the most favorable localities to produce fruit for the home or local markets.

In Alabama the main citrus sections are located in Mobile and Baldwin Counties. In Mississippi there are smaller commercial plantings along the Gulf coast. These plantings consist almost entirely of Satsuma orange trees, although a few round oranges and grapefruit are grown for home use. The industry in this section received a severe check in the heavy freezes of the winter of 1916-17 and again in 1924, when hundreds of acres of groves were cut back or killed. As a result of these freezes and a number of previous freezes, Mississippi and Alabama growers have come to the conclusion that groves should be located on the most frost-free sites, and for the greatest degree of safety the grower should make citrus culture a part of general farming rather than a single-crop venture.

These setbacks and their lessons to the growers have placed the Satsuma orange industry in Alabama and Mississippi on a more conservative basis than in earlier years. A cooperative association of the growers, known as the Gulf Coast Citrus Exchange, has been of much assistance in the development of the marketing end of the industry in that section. The Gulf Coast Horticultural Society fills the same place with reference to the citrus industry in northwestern Florida, southern Alabama, and southern Mississippi as does the Florida State Horticultural Society for the main citrus sections of Florida.

Small home orchards, including the Satsuma and round oranges and occasionally a few lemon and grapefruit trees, are found in many Gulf State sections too cold for larger commercial plantings. A few very small groves have been planted in southern Georgia and on the islands off the coasts of Georgia and South Carolina. In these colder sections citrus plantings are confined to trees budded on trifoliate-orange stock and grown in sheltered dooryards and similar spots where they can be protected in winter.

Selection of a Locality and Site for A Grove—Choosing a General Locality

The first problem to be solved by the prospective citrus grower is the selection of a general locality and a particular site in that locality for planting the grove. It is quite impossible to answer the questions so frequently asked regarding the advan-

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Fresh and Canned Fruit Industry of Porto Rico

By J. R. McKey, American Trade Commissioner, San Juan

In the fiscal years ended June 30, 1924 to 1928, shipments of fresh fruits from Porto Rico to continental United States had a combined average yearly value of approximately \$4,500,000. Grapefruit represented the principal fruit shipments, with a value of \$2,207,000 a year, followed by pineapples with a value of \$1,367,000. Oranges had an average yearly value of \$905,000 and other fresh fruits \$19,000.*

Porto Rico also exports to foreign countries around \$8,000 worth of fresh fruit a year. As Porto Rico is part of the United States, shipments to the mainland can not be considered exports, but rather interstate commerce.

The following table shows shipments of fresh fruits from Porto Rico to continental United States for several years past:

Shipments of Fresh Fruits from Porto Rico to Continental United States

Fiscal year ended June 30	Grapefruit		Oranges		Pineapples		Other fruit Value
	Boxes	Value	Boxes	Value	Crates	Value	
1915	277,000	\$ 838,000	200,000	\$ 378,000	522,000	\$1,724,000	\$ 5,600
1920	420,000	1,333,000	336,000	833,000	141,000	479,000	9,400
1921	668,000	2,020,000	162,000	446,000	173,000	575,000	3,600
1922	361,000	1,101,000	388,000	933,000	197,000	600,000	115,000
1923	461,000	1,382,000	733,000	1,749,000	237,000	726,000	131,000
1924	667,000	1,999,000	192,000	471,000	270,000	812,000	38,000
1925	580,000	1,756,000	337,000	838,000	343,000	1,046,000	22,000
1926	809,000	2,479,000	464,000	1,196,000	506,000	1,533,000	14,000
1927	692,000	2,096,000	311,000	733,000	597,000	1,791,000	7,800
1928	892,000	2,704,000	546,000	1,285,000	549,000	1,654,000	13,000
1929	215,000	530,000	22,000	60,000	529,000	1,727,000	6,300

Source: Official Porto Rican statistics.

Fresh Fruits—Production

While grapefruit, pineapples, and oranges are the only fresh fruits shipped from Porto Rico in appreciable quantities, it should be understood that several other fruits are grown, principally for domestic consumption. These include bananas, avocados (alligator pears), guavas, mangoes, mamey, cerezas, (cherries), papayas, pajuiles, and quenapa, as well as rambulanes and lanzones, two fruits recently introduced into Porto Rico from the Philippine Islands. Porto Rican bananas are of excellent quality, and several varieties are produced; occasionally, small shipments have been made to New York, prin-

cipally during periods of high prices, for use by members of the Porto Rican colony there.

Soon after the American occupation of Porto Rico in 1898, a number of Americans engaged in the production of citrus fruits and pineapples in the island. Some were officers and soldiers from the army of occupation; others were missionaries, school-teachers, or adventurers. While most of these had no previous experience, there were some persons with experience in citrus-fruit cultivation on the mainland who had become discouraged by heavy frost damage to citrus crops there. At present, most of the fruit growers are Americans, who devote their entire time to their holdings, although there are some groves owned by business and professional men.

The pioneer commercial fruit

increased interest in that section largely because of a belief that certain fruit diseases, particularly scab, are less prevalent there than on the coastal plain.

It had been hoped that landowners in the newly developed Isabella irrigation district in the northwestern portion of Porto Rico would turn to fruit production, but they have shown a preference for citrus-fruit cultivation, but there are some interior valleys in the acres of good land, a considerable portion of which faces the sea. Because of winds, the area facing the sea is not regarded as suitable for citrus-fruit cultivation, but there are some interior valleys in the district considered as promising fruit land.

The early Spanish colonists brought to Porto Rico a wide variety of citrus fruits, including oranges, limes, lemons and citrons. While grafting was known at the time, it was practiced but little, with the result that there was an extensive growth in the island of such trees as could take care of themselves. By the middle of the sixteenth century, these trees were growing wild throughout Porto Rico to such an extent that it was difficult to determine whether they were indigenous or not.

Lemon and lime plantings do well in Porto Rico, but only small quantities of either fruit are successfully grown. Among the lime plantings is one which produces a large, sweet fruit (citrus limetta), which, though in considerable favor for use in beverages, is cultivated but little.

Grapefruit

Early orange plantings in Porto Rico consisted largely of buddings on sour-orange stock, but difficulty was found in securing a combination that would thrive in the light, sandy soil. On the other hand, grapefruit plantings generally turned out good trees regardless of the stock on which the fruit slips were budded, giving grapefruit a preference among fruit growers and a consequent predominance in citrus plantings. Grapefruit was budded on various stocks, principally rough lemon stock.

Grapefruit ripens in Porto Rico the year round, with peaks of production occurring ordinarily in the periods September through October, and December through January, and at

* While statistics of shipments of fresh fruits from Porto Rico for the fiscal year ended June 30, 1929, are available, they were not considered in obtaining yearly averages on account of the fact that owing to a hurricane which swept the island in September, 1928, shipments of grapefruit and oranges were considerably below normal and, therefore, were not representative.

Fruit Industry, Porto Rico

times again in April, May, or June.

There are no dependable statistics giving the acreage at present devoted to grapefruit and other fruits in Porto Rico. However, the census of 1920 showed 219,000 grapefruit trees in bearing and 114,000 not yet in bearing, a total of 333,000 trees. Those well informed claim that there are now in Porto Rico some 5,500 to 6,000 acres of grapefruit trees and not more than 1,500 acres devoted to cultivated oranges. Land-tax records show the municipalities having the greatest acreage of citrus fruits as Toa Alta, Rio Piedras, Bayamon, Dorado, Arecibo, and Manati, given in order of importance.

The number of grapefruit trees to the acre in Porto Rico is said to average around 70, ranging from 65 to 75. In more recent plantings citrus trees have been set in rows 25 feet apart, the trees in each row being 25 feet from each other but echeloned or staggered. In many cases citrus trees have been planted 30 feet apart in each direction. Early plantings of grapefruit were arranged in 20 and 25 foot squares, with one tree at the corner of each square and an additional tree in the center of the larger square. It was the expectation that the center tree in the larger squares would be eliminated after the corner trees reached full growth, but this was not always the case.

Scientific experts acquainted with the industry claim that the production of grapefruit per tree in Porto Rico is much less than it should be because of the presence of too many trees producing little or no fruit. However, grapefruit growers estimate that the average production per tree runs around $2\frac{1}{2}$ boxes of commercial fruit.

The pomelo (or grapefruit) was practically unknown in Porto Rico prior to the American occupation of the island. In the interior of Porto Rico may be found growing wild a few "pummelo," the fruit of which is sour, bitter, and seedy. The Spaniards used to call this fruit "toronja," which name is generally applied to Porto Rican grapefruit in the island, although there is some question whether these wild toronjas are true grapefruit.

Early commercial plantings of grapefruit in Porto Rico consisted of well-known Florida varieties. At present production is about equally divided between grapefruit carrying no seeds and fruit with seeds; all grapefruit carrying seeds is called Duncan grapefruit and that without seeds Marsh seedless grapefruit, regardless of the proper varietal name.

Oranges

The orange is not indigenous to Porto Rico, early Spanish settlers having introduced a number of varieties grown in the Mediterranean region. Commercial orange growers cultivated some of the better types of oranges which they found in the island and also brought from continental United States such commercial varieties as the Parson Brown, Pineapple, Valencia, Ruby, etc. At present, imported varieties of oranges represent more than 50 per cent of Porto Rican commercial-orange plantings. It may be of interest to learn that some commercial varieties brought from the mainland have not run true to type; navel oranges have generally turned out tasteless, with hardly any juice and without seeds in many cases. While many earlier plantings were of navel oranges, but few trees remain in bearing.

There are indications that commercial-orange cultivation is on the decline in Porto Rico. As old trees die or as orange groves are displaced by grapefruit groves, few orange plantings are made by way of replacement. There are, of course, dooryard plantings from time to time by individuals for family consumption. Porto Rican cultivated orange trees average 70 to the acre, ranging from 65 to 75 trees, with an estimated average production per tree of two boxes of commercial oranges.

Mountain Oranges

While commercial growers cultivated some of the better types of orange which they found in Porto Rico, a good portion of such wild oranges escaped cultivation, continuing to grow in an uncultivated state; other trees were planted in large numbers in the mountain regions of the island as shade for coffee trees as well as along the roadside and in dooryards. None of these mountain (or uncultivated) orange trees receive any particular care, such as fertilizing, spraying, or pruning.

The mountain oranges of Porto Rico are very sweet and juicy, the fruit being reported as equal to cultivated oranges when properly handled and packed. Prior to the American occupation of the island, no efforts were made to market these oranges outside of Porto Rico, they being considered as wild fruit which anyone could have for the trouble of picking. However, a few Americans began marketing the mountain oranges, hiring natives to go into the mountains back of Mayaguez with bull carts and bring in the fruit to a central packing plant. With the development of good highways and the use of auto trucks, there has been an

increase in the quantity of mountain oranges marketed. Reliable authorities are of the opinion that mountain oranges make up around 60 to 75 per cent of the total shipments of oranges from Porto Rico.

There are now a number of establishments, mostly in and around Mayaguez, in western Porto Rico, and Ponce, in the southern portion of the island, engaged in collecting, packing, and shipping mountain oranges. Only the larger of such establishments are affiliated to obtain statistics on shipments of their oranges.

Ordinarily, a good portion of Porto Rican mountain oranges are not harvested except when, on account of attractive orange prices in continental United States, it becomes profitable for buyers to secure mountain oranges even from points in the remote interior. At such times, fruit packers endeavor to market all of this fruit which they can secure, with the result that a good proportion of immature mountain oranges may be shipped to continental United States, bringing lower prices than Porto Rican cultivated oranges in prime condition and packed under established brands.

There is usually a plentiful supply of mountain oranges, particularly during the winter months. Buyers travel through the mountain districts in the interior with auto trucks, paying from 10 cents to \$1 per 100 oranges for delivery to auto truck at roadside. Only during the midsummer season, when oranges are scarce, does the price of mountain oranges exceed 50 cents per 100 oranges to the buyers. It is estimated that the bulk of the Porto Rican mountain orange crop sells at around 30 cents per 100 oranges to buyers.

Large quantities of mountain oranges are consumed in Porto Rico, selling on the streets to consumers during several months of the year for as low as 40 cents per 100 oranges. Vendors may be seen everywhere, offering these uncultivated oranges, with the outer skin removed and an aperture at one end to facilitate sucking the juice, for a price of 1 cent each. Orange juice obtained in this manner is a favorite refreshment for both rich and poor.

Citrus Fruit Cultivation

In Porto Rico, ground for new citrus groves is plowed and disked, the spaces between the rows of citrus trees being planted to some such crop as pineapples or sugar cane, the latter being favored because of the protection which it affords young citrus trees against winds during a considerable portion of the year. Gen-

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The Cause And Control of Citrus Scab

By Arthur S. Rhoads, Associate Plant Pathologist, Florida Experiment Station

In general importance to the citrus industry, citrus scab is second only to melanose and Phomopsis stem-end rot, both of which are caused by the same organism. Scab is not uniformly severe throughout the citrus-growing sections of Florida but, in certain well-defined localities, is of the greatest importance. The losses occasioned by this disease result from a premature dropping of young fruit and a marked reduction in the grade of the fruit that reaches maturity, much of which is rated as culls. In severe attacks of the disease, from 50 to 90 percent of the susceptible varieties of fruit may be injured. It has been estimated that approximately a million boxes of fruit are infected annually.

Citrus scab may attack, to a greater or lesser extent, the leaves, twigs and fruits of many kinds of citrus. Within a given species, certain varieties may be very susceptible to the disease and others practically immune. Among the commercial species and varieties grown in Florida the sour orange, lemon and tangelo are extremely susceptible. The grapefruit and shaddock, the King orange, tangerine, mandarin orange, and Satsuma orange (these four being of the kid glove group of oranges), and the citrange are quite susceptible to infection. The sweet or round oranges and kumquats are attacked rarely and may be considered quite resistant.

The greatest commercial injury caused by citrus scab is to the grapefruit crop, although all varieties of this fruit are not attacked to the same degree. It is owing to the large increase in grapefruit plantings that this disease has attracted more attention in recent years than formerly in Florida.

Cause

The fungus (*Sphaceloma fawcetti*) causing citrus scab attacks the tissues of susceptible species only when these tissues are very young and tender. It lives over the winter on affected leaves and twigs, which serve as sources of infection the following spring. The leaves are most susceptible in the very early stages of growth and become entirely resistant by the time they reach a width of one-half inch. Young fruits are ex-

tremely susceptible to infection immediately after the falling of the petals and become progressively resistant until they reach immunity, which, in the case of grapefruit, occurs by the time they have attained a diameter of about three-quarters of an inch.

In sections where citrus scab occurs, its virulence may vary greatly

scab is a negligible factor during ordinary years and only becomes serious during years which are unusually favorable to its development.

Control

It has been amply demonstrated that citrus scab can be controlled satisfactorily and economically by the proper use of fungicidal sprays, provided the spraying be done with thoroughness at the proper time and with the proper materials. Since this disease attacks only very young and tender tissues, it is necessary that the spraying be done early in the spring if the fruit is to be protected. Bordeaux mixture has proved to be much more effective for the control of this disease than lime-sulphur, although grove conditions sometimes warrant the use of lime-sulphur.

If citrus scab is inclined to be serious it is advisable to make two spray applications with Bordeaux-oil emulsion. The first of these (3-3-50 Bordeaux mixture plus 1 percent of oil as emulsion) should be made just before the growth starts in the spring, to cover the old scab lesions and to reduce very early scab infections. The second (3-3-50 Bordeaux mixture plus ½ percent of oil as emulsion) should be made during the last of the bloom when at least two-thirds of the blossoms have fallen, to protect the expanding leaves and young fruit against the disease. Generally, however, commercial control of this disease can be secured with but the latter application, provided a thorough job of spraying be done. Such an application at this time will also serve to control early melanose.

Where citrus scab infection is not likely to be very heavy, where melanose is not a factor, and where it is desired to control red spider or rust mites on late fruit, liquid lime-sulphur should be used instead of Bordeaux-oil emulsion, making the application at the same time and using 3 to 3½ gallons per 100 gallons of water in the first and 2½ to 3 gallons per 100 gallons of water in the second.

Citrus scab may be controlled to a considerable extent by removing the sources of infection not connected with fruit production in the grove. The scattered sour orange and rough

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✓ Dr. Arthur S. Rhoads

from year to year, depending upon the climatic conditions prevailing during the stage of growth when the trees and fruit are susceptible to attack. Abundant moisture, occurring simultaneously with the young, growing tissues of susceptible species or varieties of citrus, is essential for the infection and development of scab. However, it is not necessary that all the moisture be in the form of rain since the disease is commonly quite severe even during springs of minimum rainfall in localities where heavy dews or fogs occur during the critical period or in regions of low hammocks or flatwoods soils, which are usually damp localities. In the high, dry, rolling hill country, citrus

CULTURE OF CITRUS FRUITS IN THE GULF STATES

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tages of one locality compared with another. Each section has its particular advantages and drawbacks, and one investor will prefer conditions to which another would strongly object. Prospective growers should therefore make as thorough and careful an investigation as possible, especially when the amount of capital available is limited. The various State agricultural stations will gladly advise prospective settlers as to sites, and in many cases they can put new-comers in touch with experienced, successful citrus growers from whom valuable information can be obtained. It is inadvisable to purchase lands for agricultural purposes without first making a careful personal investigation of the locality, especially when such a large investment is involved as is necessary in the development of a citrus grove.

The general advantages of any locality for a farm home, including sanitary conditions, nearness to good schools, neighbors, roads, and other factors, should be fully considered. Due emphasis should be placed on the record of any locality as to damage from killing frosts in the past. In general, growers should restrict extensive plantings to established and prosperous communities that have a long record for the extensive and profitable production of high-quality fruit.

It is a great advantage to be located near a shipping point and close to a packing house with a high reputation for the quality of its output. Long hauls are expensive and impair the shipping quality of the fruit, especially when the available roads are in poor condition.

Selection of a Grove Site

After the general locality has been selected, the question of choosing a particular site for the grove should be decided.

Frost and Air Drainage

Careful consideration must be given to the liability of a proposed site to killing frosts, for it has been strikingly shown in past freezes that the damage from cold varies greatly even in groves a mile or less apart. Florida groves on land elevated even slightly above the surrounding country were much less injured in the freeze of 1917 than adjacent groves situated in valleys or depressions or on other low-lying ground. It has been shown that cold air drains away from the higher lands and settles in the lower levels and that there may be 5 degrees or more difference

in temperature in favor of the elevated sites. This protective effect of air drainage was also very marked in the orange sections of Alabama, as well as in the other Gulf States, following the freezes of the winter of 1916-17. Groves on low lands and in depressions generally were badly frozen back, while those on higher lands in the immediate vicinity escaped with much less injury. One of the Alabama growers remarked that the freezes had had one benefit, "They have shown us where not to plant."

Soil Drainage

Land slightly elevated has another great advantage over low land and hollows, aside from that of greater freedom from frost, namely, that of better soil drainage. Good soil drainage is an essential factor, and land subject to overflow or land where the water table stands less than 3 or 4 feet from the surface at any season of the year should be avoided unless this defect can be remedied by artificial drainage.

Frost Protection by Bodies of Water

Lakes, bays, and other bodies of water may afford valuable protection from frost, particularly when they are of considerable size. This protective influence of water, however, is limited almost entirely to groves on the leeward side of the water

of Lake Apopka, Fla., a circular body of water about 25 miles in diameter, suffered very little injury, although groves 2 miles farther south were severely cut back. In this instance the freezing winds came from the northwest, and only the groves on the southern and southeastern (leeward) shores received noticeable protection. In the case of very large bodies of water, such as the Gulf of Mexico, the protection afforded is much more extensive.

Windbreaks

Belts of timber, when located on the windward side of a grove, are valuable as windbreaks and often protect the trees from drying as well as from freezing winds. On the leeward side of the grove such windbreaks are of no value and may actually be a detriment, checking air drainage. Where the grove is entirely surrounded by dense woods it is often advisable to cut one or more lanes through the woods on the leeward side of the grove so as to permit the cold air to drain away.

Soils

Although citrus trees will grow in many soils, they are much better adapted to some soils than to others, and the selection of the proper kind of soil should be carefully considered. In Florida the soil types used

Table 1.—Principal Citrus Fruits Grown in Florida, 1919 and 1925

Fruit	1919		1925	
	Bearing trees	Nonbearing trees	Boxes	Value
Orange	3,645,811	2,311,571	5,930,422	\$15,715,618
Grapefruit	1,681,481	963,336	3,158,431	6,158,941
Lime	115,624	80,870	27,725	97,040
Tangerine	38,516	29,770	67,475	236,170
Lemon	34,176	22,756	31,204	93,612

Table 2.—Citrus Fruit Tree (bearing and nonbearing) in Alabama, Mississippi, Louisiana, and Texas, 1919 and 1925

1919 Year and fruit	Alabama		Mississippi		Louisiana		Texas	
	Bearing trees	Nonbearing trees	Bearing trees	Nonbearing trees	Bearing trees	Nonbearing trees	Bearing trees	Nonbearing trees
Orange	(1)260,294	(1)165,536	(1)28,127	(1)37,350	104,382	26,356	14,331	41,329
Grapefruit	587	1,337	571	944	405	727	5,454	74,639
Miscel	(2)2,969	(2)469					(3)1,385	(3)8,333
Orange	262,689	359,126	11,406	57,109	137,456	135,931	69,336	184,878
Grapefruit			728	2,847	7,161	2,790	159,576	315,694

(1) Principally Satsuma orange. (2) Tangerine, kumquat, lemon, lime. (3) Principally lemon.

Table 3.—Citrus Planting in Florida up to July 1, 1928
(From Monthly Bulletin, State Plant Board of Florida, Aug. 1928)

Fruit	Bearing trees	Nonbearing trees	Total trees	Percentage of total citrus-trees in State
Orange	10,846,932	2,813,529	13,660,461	62
Grapefruit	5,189,679	402,503	5,592,187	25
Tangerine	1,149,490	527,552	1,677,042	8
Satsuma	235,503	293,320	528,823	2
Other citrus	263,396	304,805	568,201	3
Total	17,685,000	4,341,714	22,026,714	100

bodies and is seldom noticeable for a distance of more than a mile or so from the shore. In the freeze of 1917, groves on the southern shore

most extensively for citrus groves are known as high pine, flatwoods, high hammock, and low hammock.

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IMPRESSIONS

By The Impressionist

These Impressions are recorded at the close of the first week of the session of Chairman Wood's committee at the San Juan hotel in Orlando. The Monday after these are written the sessions are due to resume. What will then develop we cannot attempt to conjecture.

Reports current credit the summoning of approximately one hundred witnesses to appear before the committee. The first week saw the examination of only five of these. That, however, was largely because of the great amount of time consumed by the committee's examination of Dr. Wilmon Newell. In the first five days of continuous examinations just about four and one-half days went to Dr. Newell. Past experience has caused us to be present at a considerable number of court trials and hearings of one sort or another. In no case can we recall any witness having been subjected to anything approximating the grilling which Dr. Newell underwent on this occasion.

The effect of this undoubtedly was opposite to that which some opposed to Dr. Newell desired or anticipated. Job made a record for patience which has long endured; but Wilmon Newell has broken that record.

As a result it is our impression that a very great many Floridians who earlier were highly antagonistic to Dr. Newell, and who even now may question his judgment on some scores, are willing now to temper their criticism with charity. They credit him with a personal honesty and sincerity which they did not previously attribute to him.

Unfortunately there was much more talk and argument than evidence. Five days of sessions brought out just about as much actual evidence as a three-hour court session before a well qualified federal judge, say Judge Landis, would have produced. There was a tremendous amount of debating between members of the committee and witnesses concerning many points which impressed us as inconsequential.

In fact, it is our impression that

the stenographic records over these five days will show more than seventy-five per cent to consist of statements by members of the committee and less than twenty-five per cent by witnesses under examination.

We'd hate to have to sit down and read that record when it is written up. It would be worse than the Congressional Record.

Our only wonder concerning it is whether or not the parentheses and "Applause," which used to feature the Congressional Record are to be inserted.

We are right now wondering whether or not before the sessions close those who made affidavits both for and against the fly eradication work will be brought in and examined. In court an affidavit has no standing, while a deposition has. The reason is that in a deposition there is both examination by counsel and cross examination by opposing counsel. The theory is that a deposition brings out all the facts and the whole truth, while it is easy enough for an affidavit to create a wholly erroneous idea by stopping short of the whole truth. It is our notion that an affidavit unsupported by cross examination should have no standing with this committee.

To the time these lines are written the total which stands proven by evidence, according to the impression of onlookers, is that the darned fly actually was here in Florida; that it had not previously been found here; that some effort had been made to eradicate it; that some money has been put up by the federal government for that purpose; that more has been asked and that some part of this at least is going to be put up to finish the job; and that there are some persons who delight in the sound of their own voices.

That sounds cynical; and it is. It possibly reflects our disappointment at failure of the proceedings in the first week to get down to what, to us, are the vitals of our citrus situation.

Nothing adequate to the time this

is written as to why these shipping restrictions on Florida fruit when Texas, in the face of the battle there against the Morelos fruit fly, has been free to ship without sterilization of its fruit. Which fact has cost Florida citrus growers a pretty penny this past few months.

And not a word concerning how compliance with the quarantine regulations, picking up drops, etc., is increasing the costs of production of Florida citrus growers. It is our impression that this results in increasing the cost of producing, say grapefruit, just about one-third.

To date we credit Governor Carlton for Florida and Representative Byrnes of Tennessee for the committee with outstanding performances and preeminent fairness.

In saying that we admit prejudice to an extent against Representative Buchanan of Texas. While personally he doubtless is without blame we constantly have in mind that embargo which Texas promulgated against Florida products, which bars even sprays of asparagus ferns as possible fruit fly carriers. That is about as fine and logical as it might be to bar Alabama coal as a possible carrier of the parrot disease.

It is only fair, however, to suggest that the members of this committee labor under the handicap of being strangers in a strange land, trying to get the straight of a quite complicated situation, and hampered to no little extent by volunteer aid which apparently is more greatly interested in grinding personal axes than in getting down to real assistance to the industry which suffers, and must continue to suffer until extricated from its predicament.

There is some humor in the spectacle of some discharged employees of the fly fighting forces, discharged because of complaints of growers as to their unnecessary severity and incivility, most actively aiding some members of the committee in their inquiry into just such phases of the past situation.

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Gummosis And Psorosis of Citrus Trees

By Arthur S. Rhoads, Associate Plant Pathologist, Florida Experiment Station

Gummosis and Psorosis are destructive bark diseases of citrus trees found in many groves throughout Florida and of such widespread occurrence in certain sections as to cause considerable alarm on the part of growers.

Distinction Between Gummosis And Psorosis

Due to lack of distinct, published accounts of the differences, there has been confusion in the minds of many growers as to the distinction between gummosis and psorosis. There are, however, distinguishing characteristics.

Gummosis appears at first as small cracks in the bark of the trunks and larger branches, from which gum exudes and frequently runs down the bark, forming what is known as "tears." This exudation of gum is most active in the spring and early summer. If not washed away by rains, the gum hardens and collects in masses at the cracked places in the bark. Later, the surface of the bark, or sometimes the entire bark down to the wood, will become discolored on either side of the ruptured place and die, often separating from the wood in local areas by the formation of liquid gum beneath it. As the disease progresses, additional areas become infected and the bark about the older cracks becomes infiltrated with gum, dries out and hardens, and is forced up in irregular, partially detached scales or narrow strips as the bark remaining alive beneath begins to callous over. The areas heal in many cases and the scales or bits of dead bark tissue slough off, leaving a series of light-colored to brownish, resinous-appearing scars. In some cases the gum flow ceases and the disease may remain quiescent for a time but often breaks out anew later in advance of the old area. In the well advanced cases of the disease the bark acquires a scaly, ulcerated appearance, which may involve considerable portions of the trunks or branches. In many cases, where the disease does not seem to be particularly serious, the bark between the gumming cracks, together with the underlying wood, may become invaded and discolored and large areas may be killed within a short time, with the result that

the life of large limbs or the trunk may be threatened.

Psorosis usually begins with one or more small, more or less circular areas in which only a thin layer of the outer bark dies, hardens and scales off from the living bark underneath. In its early stages, the disease is so inconspicuous as to be readily overlooked by the untrained eye. However, in advanced stages, it becomes very conspicuous by the outer bark breaking up into large flakes, scales or shaggy strips which curl away from the trunks or branches as they slough off. The disease may often even completely encircle the trunk or limb attacked without causing serious injury to the cambium or underlying wood. The disease is characterized by a more or less continual breaking out of the bark in advance of the limits of the lesion and a subsequent healing within the affected area, the regenerated bark being irregularly roughened and brownish. This gives the infected area a swollen, scaly and ulcerated appearance. With the progress of the disease, the inner bark tissue left exposed by the scaling off of the outer bark becomes involved and the cambium is killed in spots. Little or no gum exudation accompanies the disease until the inner bark and the cambium have become involved. Even then, although the dead bark is generally infiltrated with gum, the gum flow usually is reduced to scattered drops at either end of the lesion. In the late stages of psorosis the outer wood also may become involved, causing a streaked brownish discoloration, and enough of the bark may be killed to girdle the attacked trunk or branch, as a result of which, in advanced stages, it forms characteristic band-like lesions varying in width from a few inches on the smaller branches to from two to three, or even more, feet on the trunks and larger limbs. This characteristic feature further serves to distinguish the disease from gummosis. Moreover, psorosis lesions often occur on the smaller branches as well as on the trunks and main limbs, whereas the most common and typical form of gummosis is confined to the trunks and larger branches.

Gummosis attacks chiefly the cul-

tivated lemon, grapefruit and orange, being especially common and severe on the first two. Psorosis attacks chiefly the tangerine, orange and grapefruit. Tangerines develop this trouble more frequently than any other commercially grown citrus trees in Florida but seem to withstand the disease longer than either oranges or grapefruit. Of the oranges, the Valencia appears to be particularly susceptible. The sour orange is very resistant to both gummosis and psorosis.

HEALTHIEST BOY

VISITS STATE

The nation's healthiest 4-H club boy, Harold Deatline, accepted an invitation to the annual town celebration at Eustis February 22. Mildred Hilliard, Hernando County, Florida, second healthiest girl in Florida, was also invited. They were invited to Brooksville February 23.



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Published Monthly by
Associated Publications Corporation
Tampa, Florida

Subscription, \$1.00 per year in advance

Entered as second-class matter February 16, 1920, at the post-office at Tampa, Florida under the act of March 3, 1879.

Branch office and production plant, Bartow, Florida.

NEW YORK OFFICE
115 East 28th Street
Edwin F. Ripley, Manager

GROVE CALENDAR FOR MARCH

Timely Suggestions for Grove Work During the Present Month.

Keep the harrow going in grove every week or ten days.

Trim nursery stock preparatory to budding; start budding if stock is ready.

This is a good time to trim out dead limbs and branches.

Spray or dust late fruit with sulphur, if rust mites are numerous.

Spray to control scab with 3-3-50 Bordeaux plus 1 per cent of oil.

THE FLY SITUATION

The lamentable and lamented hearing of the special appropriations committee of congress, appointed to investigate the needs of Florida for continuation of the work of eradicating the Mediterranean fruit fly, is at an end. With its bickerings, its personalities, its recriminations, its animosities and its enmities, it is past. Let us try to forget its sting and labor to heal the wounds inflicted in the heat of partisan strife and under the lash of personal hate and fear.

Everything accomplished by the committee at Orlando in two weeks of villification, vituperation and invective, might well have been gained in a thirty-minute conference in Washington, and Florida and the citrus industry have been spared the spectacle which well-wishers of the state and industry must regret. But that, too, is now a matter of history and may well be relegated to the realm of oblivion along with the wild words uttered and the wilder action implied. Let us hope that we may have no more such hearings in Florida—or elsewhere. No good can come from prolonging the agony. Let the dead past bury its dead.

As the net result of the ill-advised and ill-timed hearing, it appears that we are to have some sort of appropriation for continuing the work

of eradication. Whether this shall be the \$8,744,292.17 recommended by Chairman Newell of the Florida Plant Board or some other sum to be recommended by the committee itself, only time and congress can tell, but at least it seems certain that we shall have something—in spite of the evident purpose of some members of the committee to cut us off without a cent.

This is as it should be. Whatever the actual situation as regards the fly may be—and no two persons, either laymen or experts, seem able to agree as to the exact status of the situation—the Department of Agriculture says the fly is here. Florida growers are suffering under irksome quarantine and shipping regulations imposed by federal authority. Until the department shall officially declare Florida free of the fly, we shall continue to suffer these restrictions. This being the case, it is up to the federal government to continue eradication measures until federal authorities are ready to lift the official ban. That is all Florida has ever asked; all that other states threatened with invasion by the fly, have ever asked—but that much Florida and other states are entitled to demand.

As to the amount of the appropriation to be made, that is immaterial, so long as it is sufficient to eradicate the fly. Whether that sum is one million or twenty millions does not concern the Florida grower—so long as it is sufficient to permit the lifting of the ban from Florida shipments. All that Florida asks or hopes is that the appropriations committee and congress will provide a fund adequate to the needs, and that the work may be pushed to a speedy conclusion which will permit the free movement of Florida crops next season.

Wonder if Chairman Wood believes that Mediterranean fruit fly larvae discovered in a shipment of Hawaiian oranges which entered the port of San Francisco the other day was "planted." If so, we trust that he will promptly trot out the culprit.

First reports of damage to Texas citrus groves by the recent cold wave, like most first reports, prove to have been grossly exaggerated.

Well, now that we have gotten most of the bile out of our systems at the special committee hearings, let's get down to the business of making a crop of REAL citrus fruit next season.

Present conditions of bloom point to a big crop next season. But, there have been other seasons when early conditions of bloom were not borne out by the final returns.

Just plain politics in the citrus industry is bad enough, but party politics injected into the industry proves to be even worse.

Well, thank the Lord, visitations of special congressional committees are few and far between.

It is just too bad, but quality fruit will not grow without quality care and attention.

BLUE GOOSE NEWS

Monthly News of American Fruit Growers Inc.



Edited by The Growers Service Department

VOLUME 4.—NO. 4

ORLANDO, FLORIDA, MARCH, 1930

PAGE 1

WILLIAM H. BAGGS SEES FLORIDA BUSINESS SOUND

Concluding several weeks stay in Florida, William H. Baggs, general manager of the national organization of the American Fruit Growers Inc. has returned to his headquarters in Pittsburgh. Before leaving Orlando he expressed himself freely concerning the situation in Florida as he sees it.

Not only is Florida fundamentally sound, in Mr. Baggs' opinion, but the future of the citrus business appears bright. He expressed conviction that "in the long pull over a period of years" citrus production in Florida is due to be prosperous and thriving. Indicating belief that the citrus industry in Florida had turned the corner, he was wholly optimistic concerning the future.

"That is my judgment, and that of my associates, and in token of our conviction, we are preparing for a greater expansion of our Florida operations and developments than in any other producing section in which we operate. We are backing our belief with our own money. That is best evidence of the sincerity of what I am saying to you," Mr. Baggs told employees in the Orlando offices.

Of course, Florida is due for troubles of one kind or another from time to time, for what producing section is not? That seemed to express Mr. Baggs' sentiments; but "over the long pull," he was tremendously confident of Florida's success.

That most of Florida's real difficulties have been due to lack of restraint in airing various happenings in the press of Florida, in the produce trade papers, and in newspapers and magazines in the North, was very clearly Mr. Baggs' opinion. While he did not specify particulars, it was clear he had in mind the almost continuous bad publicity Florida has had over the period of last five years, beginning with the drive to get all fruit into a single marketing organization, involving charges that Florida citrus marketing was "chaotic;" that Florida

Continued on page 2

FORTY SIX MILLIONS NET PAID TO GROWERS

Everybody in the United States knows Skookum apples, sold in the markets by the American Fruit Growers Inc. over a period of years.

Very interesting, as a sidelight upon the business of apple growing in the Northwest, are some of the figures revealed at a recent annual meeting of the Skookum Packers Association held in Wenatchee, Washington. During the period of nineteen and one-half years covered by this report the growers received, net returns with all costs deducted, \$46,687,335.85. This was in payment for 34,688,877 boxes of apples. It means that the net price received by the growers for all grades, sizes and varieties of apples shipped during this time averaged \$1.34½ per box.

There is a record likely to attract the attention of fruit growers anywhere, for the period of years covered, for the popularizing of a product with the consuming public, for maintaining continuously sales outlets during both large and small crop years, and for the highly satisfactory net returns to the producers for all kinds, varieties, grades and sizes.

Harry J. Kerr, prominent apple grower and banker of Okanagan, and one of the oldest members of the association became its president at this meeting. He is treasurer of the Okanagan Growers Union.

The American Fruit Growers Inc. plays a dual role in the Skookum Packers Association, being both sales agent in the markets and a producer-member for the fruit which it produces and packs. In the award of prizes by the retiring president for "the best packing operation" during the past year first prize was given to the American Fruit Growers Inc., Ninth Street plant at Wenatchee; second prize went to the American Fruit Growers Inc., Pateros plant; and third prize to the Peshastin Skookum Growers.

OUTLOOK IS EXCELLENT FOR CLEANING UP CROP

With some packing houses running double shifts there is an apparent excellent outlook for cleaning up the present season's citrus crop within the period allotted by the U. S. Department of Agriculture.

Extension of the period of permitted shipment to April 15, and concessions allowing storing fruit in cold storage at stipulated temperatures (which this time are within practical limits), and making western market outlets possible without necessity for heat-sterilizing or "processing," now contribute to make this possible.

Not so many packing houses will require double shifts, however. Indications are that with these changed conditions the great majority of the citrus packing houses of Florida will be able to care for the remaining portion of the season's short crop by adhering to their regular schedules.

But for the limitation upon the length of the shipping season there is small doubt that this season would be due to wind up in a "blaze of glory," such as the shortness of the crop normally would warrant. However, imposition of this limitation will send to market within this period a sufficient volume of fruit to keep down any tendency of the markets to run wild on prices.

At that, there is considerable satisfaction in the outlook. With the period of the worst weather, such as handicaps fruit distribution in northern markets severely at times, and the period of large citrus consumption at hand, there promises to be an available demand which should balance with the supply which is due to go forward.

Minus the competition of grapefruit from other producing areas, and in the face of very excellent consumer-demand the grapefruit outlook is most satisfactory.

The shortened supply of oranges from all sources, and a consumer-demand for fruit of good flavor which is undoubtedly the best in a long per-

Continued on page 2

BLUE GOOSE NEWS

OFFICIAL publication of the American Fruit Growers Inc., Growers Service Department, published the first of each month in the interest of the citrus growers of the state of Florida.

EDITORIAL ROOMS
Sixth Floor, State Bank Bldg.
ORLANDO, FLORIDA



A COMPLETE SERVICE

To every grower a ready market; to every buyer a complete service.

Growers and buyers are brought close together through service of the American Fruit Growers Inc. To the growers the widest markets are unfolded. The growers provide good products and high quality packs, in quantities large or small, and combine to provide a complete reliable service which delivers regular shipments into the markets. Buyers are enabled to develop stronger demand because of this dependability. Both growers and the trade profit through the internationally known Blue Goose trademark.

The American Fruit Growers Inc., links them together—growers and buyers—to supply the demand. The American Fruit Growers Inc., is active in every important growing area of the United States, and is selling regularly in every carload market in the United States, Canada and many overseas countries.

Day after day, year after year, the organization of the American Fruit Growers Inc., is working in the producing fields to maintain good grades and packs, and in the consuming markets to promote a regular balanced demand.

Whether you are a grower, shipper or buyer, this international service at point of production and at the point of sale is daily operating to your advantage. It offers dependable means of wise expansion.

The American Fruit Growers Inc.,
Adv.

is in touch with the latest developments; it is in step with modern methods; it has ample finances and effective man-power to meet successfully the demands of the present, and to safeguard operations of the future.

Today, as you read this, in two hundred carlot sales centers of the United States and foreign countries men whose duty it is on behalf of the American Fruit Growers Inc., to maintain these grower-buyer contacts are presenting a complete line under an advertised trademark; and are able to command confidence because of the established policies of the organization they represent, and the fact that the combined capital and surplus of eight millions of dollars assure its responsibility.

Further, continued daily contacts throughout all the year permit an understanding and efficient service, and promote a mutual dependence otherwise impossible.

Growers depend upon the service of the American Fruit Growers Inc., to find profitable markets for their production, and to enlarge the demand therefor from the consuming public. Buyers depend upon the services of the American Fruit Growers Inc., for continuing and constant supplies of dependable products to meet their requirements. In adequately meeting the needs of both growers and buyers the American Fruit Growers Inc., performs an economic service which is as valuable as it is distinctive.

WILLIAM H. BAGGS SEES FLORIDA BUSINESS SOUND

Continued from page 1

must have a "citrus czar," the bad publicity attendant upon the hurricanes; the turmoil and the publicity incident to organizing the Clearing House; the flood of publicity from many sources concerning the fruit fly, and lastly concerning the "investigation" of the fly work.

"No perishable producing section," said Mr. Baggs, "is ever long without troubles of one kind or another. That seems to be an accompaniment to producing perishable foodstuffs. We know this very thoroughly, because we are so closely in touch with the affairs of a number of producing sections. The outstanding difference, to me, is the manner in which Florida's difficulties get before the outside public, while other sections contrive to keep their troubles to themselves.

"The individual who constantly

parades his troubles always does himself far more harm than good; and what is true individually is true collectively," said Mr. Baggs.

"What Florida needs most right now is some good honest-to-goodness boosting, from some honest-to-good boosters," he said. "There have been more than enough of complaints and complaining for the outside world to listen to."

Concerning his careful inspection of the Florida affairs of the AFG organization, Mr. Baggs expressed pleasure and gratification. The substantial and continuing expansion of the Florida business of the American Fruit Growers Inc., and the high type of successful growers who are availing themselves of the services of this selling agency, in his opinion testify to the efficiency of the operations of the American Fruit Growers Inc., in Florida; and warrant further provision for growth and expansion

OUTLOOK IS EXCELLENT FOR CLEANING UP CROP

Continued from page 1

iod, will put good oranges in an excellent position.

There have been a lot of "ifs and buts" all through this present season; and a lot remain. However, Florida has been and is confronted by conditions and not theories; and there is small profit in rehashing difficulties or in anticipating those which may arise. On the other hand, there is comfort in pausing and thinking that the outcome of this season's marketing operations, difficult as those operations have been, upon the average is much better than there was any good reason to anticipate at any time before the shipping season opened. We have been hurt, but not so badly hurt as generally we expected to be. The crop has failed to obtain the prices which it should have been expected to obtain in a normal season with citrus and other fruit production at the low volume of this year. Yet it has generally realized better average returns than most expected.

Comparison of the net returns to the growers through the various marketing channels affords abundant evidence of the strength and efficiency of the marketing machinery which the American Fruit Growers Inc. maintains for those growers it serves; and evidences its unusual ability to adapt itself to changing circumstances.

The excellent bloom upon the trees as this is written does not in the

More dealers look to the American Fruit Growers Inc. for their supplies of fresh fruits and vegetables throughout the year than to any other marketing organization.

opinion of experts argue a tremendous crop for next season. There has been a heavy mortality among certain insects which normally affect pollenization; and not until the crop is fully set will it be safe to guess concerning next season's possible production.

LAKELAND GROWERS INC., IS NEW AFG AFFILIATION

Lakeland Growers Inc., of Lakeland, in Polk County, is the newest affiliation of the American Fruit Growers Inc., in Florida.

This new growers' organization has acquired a packing house at Lakeland, which is most advantageously located in the heart of the city and just adjoining the business center.

Walter J. Merrill, long known to citrus growers of this section of Polk County, is manager of Lakeland Growers Inc. Provision will be made for putting this in the best possible shape, in order to handle next season's shipping from a considerable number of progressive growers in the territory in a manner which will make it an important link in the chain of the American Fruit Growers Inc., in Florida.

MUCH DATA IN NEW YORK ON FOREIGN FRUIT TRADE

New York, Feb. 28. — "Foreign Trade in Fresh Fruits" is the title of a 100-page booklets just issued by the Bureau of Foreign & Domestic Commerce of the U. S. Dep't. of Commerce. The author is D. J. Moriarity, of the Foodstuffs Division. The book contains much information about the quantities of fresh fruits exported, the price, best way of handling and when and how the fruit should be shipped.

Exports of American fruits in 1927 were valued at \$60,000,000, an advance from \$33,000,000 in 1923. Apples were the leading fruit exported, the value amounting to \$27,000,000 in 1928—over \$17,000,000 for boxed apples and over \$9,000,000 for barreled fruit. Oranges came next with a value of \$13,900,000; pears \$4,100,000; grapefruit \$2,900,000; grapes \$2,500,000; berries \$1,430,000; lemons \$1,430,000; peaches \$730,000; pineapples \$146,000 and other fresh fruits \$2,300,000.

Definite information about the grading of various fruits is given in the booklet. Particular emphasis is

placed upon the necessity of properly grading and packing all fruit for export; attractive packages are also a prime necessity. It also calls attention to the fact that fruit exporting is a highly competitive business and one into which nobody should enter without being familiar with all available facts.

AFG ABSORBS STEWART CONCERN ON THE COAST

Plants of the Stewart Fruit Co., one of the oldest, and most important grape and deciduous fruit handling concerns upon the Pacific Coast, with general offices at San Francisco, are now part of the American Fruit Growers, Inc., California. This includes plants at Hanford, Modesto, Sacramento, Fair Oaks, Oroville, Suisun, Meinert, Napa, Kelseyville, Finley and Hopland, also the Chicago sales office.

All members of the field force of the Stewart company said by trade papers to be one of the best trained aggregations of the sort on the Coast as a result of many years careful training by the late W. H. Stewart, have joined the ranks of the American Fruit Growers' organization.



AFG PERSONALITIES

✓ J. S. CRUTCHFIELD, PRESIDENT—the foremost outstanding figure in the produce field in this generation. Originator of the idea of a great national sales organization for the growers, which has proven so successful. As a young man he made his debut into the fruit business in a Florida citrus packing house.

Three Acres Is Farm Say Census Officials

A farm, according to the Census Bureau, is all the land farmed by one person, whether it is three acres or three thousand acres.

Sounds simple, doesn't it? But it wasn't so simple for the Government officials to decide what the enumerators shall enumerate as a farm when they take the census in April. Much study, in the light of years of practical experience, by officials of the Census Bureau of the Department of Commerce, aided by representatives of the Department of Agriculture, was necessary before the short, concise definition was agreed upon.

The area of farm land owned by one person has nothing to do with the definition of a farm so far as the Census Bureau is concerned. The question is, not how much land does he own, but how much does he operate or farm. A man who owns 300 acres might farm half of it himself and rent the other half out to three tenants, 50 acres to each. This would go down on the census records as four farms, because the land farmed by each man is considered as a unit.

On the other hand, one man might rent various tracts of land from 10 different owners. He might rent a few acres on shares, a few more from somebody else for money rent, and the rest from other people on different terms. The different pieces of land might be widely separated. If they were all farmed and managed by one man, they would all be put down together as one farm. If, however, a separate manager were hired to supervise a certain part of the land, that part would go down as a separate farm.

Again, one man may operate 100 acres of farm land which he owns and he may also rent from a neighbor and operate an additional tract of 20 acres. In that case he will be reported in the census as operating one farm of 120 acres, but the report will show that he owns 100 acres of the farm and rents the additional 20 acres. This 20 acres of land should not be reported as a farm by the neighbor from whom it is rented.

No tract of land of less than three acres will be registered as a farm unless it produced last year, at least \$250 worth of farm products, either consumed on the farm or sold. In the census of 1920, if a piece of land of

less than three acres was farmed by a man who gave his entire time to the task, it was listed as a farm regardless of how little it produced, but this year none of these small tracts will be counted unless they produced \$250 worth of products, regardless of how many people spent their full time cultivating the area. The Census Bureau estimates that approximately 5,000 tracts of less than three acres in the United States are farmed by individuals who give their full time to the occupation. This change in the classification of farms is the only difference between the Census Bureau's regulations for farm enumeration in 1930 from those of ten years ago.

There is necessarily a borderland between what is a farm and what is not, says the Census Bureau. A small place on the edge of a town or village is often the home of a city worker who undertakes to keep a cow, some chickens, and probably cut a little hay or raise a large garden or small crop. If the agricultural products from such a place amounted to \$250 or more in 1929, it shall be counted as a farm, regardless of much or how little the city worker gave to his farming pursuits, and regardless of how small the tract of land tended.

On the other hand, a large country place of 10, 15, or 20 acres may not necessarily qualify as a farm. Actual farming or agricultural operations must be carried out before any tract of land will be classed in this category. A large country estate of a retired capitalist is not a farm if the only work done around the place consists of mowing the lawns and trimming the hedges. If the estate is of more than three acres, however, a very small amount of agricultural products could give it the rank of a farm, regardless of whether the products amounted to \$250 or not. In such a case as this, it would be up to the judgment of the census enumerator to decide whether agricultural operations were being carried on. Farm land is considered "operated" not only when cultivated crops are raised on it, but also when it is used to any significant extent for pasture or for production of hay.

A number of agricultural pursuits not usually considered by the average person as farming come within the Census Bureau's definition. All mar-

ket and truck gardens, fruit orchards, nurseries, greenhouses, poultry yards, places for keeping bees, and all dairies in or near cities, even though little land is employed, are, for census purposes, farms, provided they produced in 1929 \$250 worth of agricultural products. If such places contain more than three acres they are farms regardless of the value of their produce.

In 1925, the last year in which a farm census was taken in the United States, there were 15,151 farms of less than three acres. The total number of farms in the Nation at that time was 6,371,640.

The general definition of a farm—"All the land which is directly farmed by one person, either by his own labor alone or with the assistance of members of his household or hired employees"—has remained practically the same since 1870, the first year in which it was used by the Census Bureau. However, the increasing number of factory workers and business and professional men who live on little places along country roads and keep cows or chickens and have vegetable gardens, is making this matter of definition of a farm more important as well as more difficult. It is more necessary, therefore, than ever before that these "amphibian" farmers, as they have been called, should have the facts ready for the census enumerators to use in deciding whether the place is a farm when he calls in April.



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CALIFORNIA FINDS FRUIT FLY IN HAWAIIAN ORANGES

San Francisco, March 10.—(A.P.) —Discovery of Mediterranean fruit fly larvae in a small shipment of Hawaiian oranges, was announced here today by state agricultural officials.

The shipment, consigned from one Hawaiian port to another, was not intended for the mainland and had been dropped into a mail bay by mistake, Fred C. Brosius, supervising quarantine officer for this port, explained.

CUBAN HORTICULTURIST STUDYING IN FLORIDA

Fernando Agete, horticulturist with the Agricultural Experimental Station at Santiago, in the Province of Habana, Cuba, is spending a few weeks in Florida studying the horticulture of the state. He arrived in Miami February 17, practically covered the southern half of the state, arriving in Gainesville March 3 for a 10-day study of the Florida Experiment Station.

NEXT EXTENSION MEET HELD IN JACKSONVILLE

The agricultural extension representatives of the 15 southern states will hold their next annual meeting in Jacksonville. This was the unanimous choice of the convention recently held in Jackson, Mississippi, where the Florida Agricultural Extension Division was represented. Arrangements will be made by the Gainesville office.

HOME MADE SEED DUSTER IN COUNTY AGENT'S OFFICE

A home made seed duster sits in the office of County Agent T. J. Rickenbacker, Bradford County, and instead of advising farmers to dust their seed he tells them to bring them in and they actually do the job in the agent's office.

The duster was built by a local druggist. Due to its simplicity, extension specialists expect a number of farmers to duplicate it.

HEALTH TALKS RECORDED

The radio talks made at the National 4-H Club Congress by Florence Smock, healthiest club girl, and Miss Mary A. Stennis, extension nutritionist for Florida, have been read into the Congressional Record. Congressman R. A. Green, Florida, who proposed the action, spoke very favorably of the achievement of Florida 4-H clubs.

Simple Arithmetic And Grove Profits

Trees can't talk—but if they could, they would cry out in protest at any attempt to save money by a reduction in the "quality" and amount of their food.

It is easy to save money on fertilizer, but when you consider that a difference of \$5.00 per ton is equal to only 5 cents a tree, based on an application of 20 pounds per tree, the wisdom of feeding the trees liberally with the proper kind and amount of fertilizer will readily be seen.

ORANGE BELT BRANDS cost less in the long run, because of the greater per ton value. This difference in "quality" is reflected in your bank balance when the crop is marketed.

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"QUALITY FERTILIZER FOR QUALITY FRUIT"

FRESH AND CANNED FRUIT INDUSTRY OF PORTO RICO

Continued from page 7

erally, this extra crop is eliminated about the time that the citrus trees are 4 years of age; thereafter, most citrus growers disk the soil once a year, applying fertilizer at the same time, while others merely cut the grass and weeds and use them as mulch.

Hardly any two citrus growers entertain the same belief or follow the same practice in the use of fertilizer. Each puts on the ground as much fertilizer as he feels that he can afford, running to an average of 1 ton per acre per year. One method used for stimulating the growth of citrus trees calls for a fertilizer high in ammonia content and low in phosphoric acid and potash, in a ratio of perhaps 10 to 5 to 5; another used for stimulating fruit production calls for high phosphoric-acid and potash content and low ammonia content. Of the nitrogenous content used in fertilizers, about one-third is derived from nitrate of soda and two-thirds from sulphate of ammonia.

As yet irrigation has not been practiced other than experimentally by Porto Rican fruit growers.

Transportation Facilities

A network of excellent highways covers Porto Rico, and there is comparatively little fruit land which is not within a few miles of good roads, all of which connect directly or indirectly with the city and port of San Juan. Growers with experience in both Porto Rico and continental United States claim that motor-truck transportation is less expensive in Porto Rico, notwithstanding high truck license fees.

Labor

About 75 per cent of the population of Porto Rico is white, mostly of Spanish descent, and the remainder negro or a mixture of negro and white with a considerable trace of native Indian stock, which no longer exists as a pure racial strain. The bulk of the labor employed in the fruit industry of Porto Rico is colored, the greater portion of the colored population residing on the coastal plain of the island where most of the fruit is produced. Some white labor is employed in supervisory capacities on fruit groves and in fruit canneries.

Wages for a foreman on a fruit grove vary from about \$15 to about \$25 a week, while ordinary labor receives 75 cents to \$1.25 a day, being paid by the day, week, month, or perhaps by the piece. Good drivers for heavy motor trucks in the vicinity of

THE CITRUS INDUSTRY

San Juan receive around \$25 a week, furnishing their own shelter and food, while drivers of lighter motor trucks get from \$15 to \$20 a week. The scale of wages is somewhat lower in the interior fruit districts.

The Porto Rican fruit industry, with the exception of mountain oranges, is in the hands of Americans, and it is reported that the labor employed by them is probably better paid and treated, on the whole, than that employed in any other agricultural pursuit on the island. It would appear that, dollar for dollar, there is a greater labor output in Porto Rico than in continental United States, assuming tactful management and proper treatment of such workers. There is a plentiful supply of labor in the island.

Porto Rico has a law regulating the employment of minors, providing that employment of those under 16 years of age shall not be permitted to deprive them of opportunities for schooling. The administration of this regulation is in the hands of the insular bureau of labor, whose principal concern is the encouragement of industries which will tend to relieve the rather serious unemployment problem existing in Porto Rico. Those

Nineteen

engaged in fruit production in the island have had little or no incentive for violating this regulation nor any particular occasion for complaint regarding its operation.

Fruit growers usually provide cottages to house the families of laborers regularly employed by them, each family being apportioned a small plot of ground for gardening or the maintenance of a cow and poultry or pigs. When additional labor is required by the grower, it is drawn from near-by villages or towns. The women of the family of the regularly employed laborer may find employment in fruit-packing houses or canneries during the busy season and in the tobacco or needlework industries at other times.

Continued Next Issue

105 TONS CROTALARIA SEED SOLD TO FLORIDA FARMERS

E. L. Lewis, general manager of the Palo Alta Fruit Corporation, recently stated that his Company had sold 105 tons of Crotalaria seed to Florida farmers to be sown as a cover crop for the coming summer, and that he was trying to negotiate for more seed from the Company's seed plots in Porto Rico.

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CULTURE OF CITRUS FRUITS IN THE GULF STATES

Continued from page 9

Low-hammock soils in their virgin state support a luxuriant growth of cabbage palmettos, oaks, bays, or other hardwood trees. They are the richest of the four soil types in fertility and humus, and while expensive to clear they make excellent citrus soils if well drained.

High-hammock lands have a higher elevation and a more open growth of hardwood trees than low-hammock lands. They are fertile and well drained, and many growers consider them the most desirable of all citrus soils. In general, these hammock soils require much less fertilizer than the lighter pineland soils.

Most of the recent citrus plantings in Florida have been made on high pineland, three grades of which are recognized. The best grade is characterized by large straight-growing pines with occasional oaks, hickories, or other hardwood trees. The soil is a sandy loam, fairly rich in humus, and is underlain with a clay subsoil at a depth of 6 feet or less. In second-grade pinelands the pine trees are smaller and there are few or no hardwoods, while the subsoil is farther from the surface. In the third or poorer grade the pines are still smaller and scrubby and the clay subsoil far below the surface soil.

The high pinelands as a class are well drained and relatively inexpensive to clear. The better grades, while not high in fertility, make good citrus lands if the humus supply is adequately maintained.

Flatwoods pineland is usually low and uniform in elevation. The soil is often rich in humus, and where such land can be adequately drained it may be well adapted to citrus culture. Many flatwoods areas, however, are poorly drained or subject to overflow. Frequently they are underlain with a layer of hardpan. Such soils are of very inferior value for citrus trees and should be avoided. A dense growth of saw palmettos in pine flatwoods is frequently an indication of an undesirable hardpan or subsoil.

The several soil types described for Florida are also found in some of the other Gulf States. In Louisiana, south of New Orleans, the soil is of a rich alluvial character and is frequently subject to overflow from the Mississippi River, so that high dikes are often necessary to keep the water from injuring the groves.

In the Rio Grande Valley of Texas the soils are of a silty formation. In southern Alabama and Mississippi

THE CITRUS INDUSTRY

well-drained hammock lands and the more fertile type of pinelands are preferred for citrus plantings. The best types contain considerable humus and have a clay subsoil within 2 or 3 feet of the surface.

Kinds and Varieties of Citrus Fruits For the Gulf States—Relative Importance of Citrus Fruits Grown

After the locality and site have been selected, the next problem is that of choosing the best kinds and varieties of citrus trees for planting. The most important citrus fruit grown in Florida is the common round sweet orange, which is produced in all the citrus sections of the State. Round oranges are also grown commercially in the diked region

south of New Orleans.

Grapefruit ranks next to the round orange in importance. The trees are less hardy than the orange, and extensive plantings are found only in central and southern Florida and in the Rio Grande Valley of Texas, although there are a few grapefruit trees in the orange sections of Louisiana and in the other Gulf State citrus sections.

The Satsuma orange and the tangerine rank next to grapefruit in importance. Satsuma oranges are the most important of the citrus fruits grown in northwestern Florida and in the southern portions of Alabama, Mississippi, and Louisiana, as well as in other sections too cold for round oranges and grapefruit. Although the



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FERTILIZERS were sold during the month of January, 1930, than in any month in the history of the Nitrate Agencies Company in Florida.

This record of progress was made in spite of the handicap of tightened credits and the competition of "just as good" brands and formulas offered at lower prices per ton.

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Satsuma orange when budded on trifoliolate stock is considerably hardier than the round orange, it is by no means frost proof, and it should be planted only on the more frost-free sites of the sections where it has already proved successful. In southern Florida the Satsuma orange is of unsatisfactory quality and is seldom planted. The tangerine is grown most extensively in southern and central Florida, but it is also occasionally found in all the citrus sections of the Gulf States. It is almost as hardy as the Satsuma orange when grown on the same stock.

Lemons are much more tender than oranges and should be planted commercially only in the warmest sections. Prior to the great freeze of 1895, which killed most of the trees, many thousand of boxes of lemons were shipped from Florida, but now there are no large commercial lemon groves in the Gulf States, although numerous lemon trees are grown in dooryards throughout southern Florida. It is possible that lemon culture could be extended in the most protected regions of extreme southern Florida, such as the coastal regions south of Fort Pierce and Punta Gorda, to the point of producing sufficient fruit for the local markets.

Limes are still more tender than lemons, and their commercial culture is restricted to the Florida keys and to a few of the best-protected localities of southern Florida. For home use limes are often grown in sheltered dooryards much farther north. The production of limes has diminished with the decreased demand due in part to prohibition and in part to the exploitation of cheap synthetic soft drinks. Lime wither tip, a specific disease of the lime, has also caused some falling off in the production from existing groves on the Florida keys.

The kumquat is a small tree or bush which bears abundant round or egg-shaped fruit the size of small plums. It is hardy, makes a handsome ornamental, and is popular as a dooryard shrub in all the Gulf coast sections. The fruit is grown to a small extent commercially and shipped to the North as fancy fruit for the holiday trade. In the vicinity of Mobile and in a few other sections kumquats are grown for marmalade and other preserves.

Citrons, shaddocks, and a number of other citrus fruits are occasionally grown as ornamentals or for local use in Florida and the Gulf coast sections.

Recently considerable interest has

been fostered by the importers of citron peel in attempts to grow citron commercially in Florida. A few acres of the citron of commerce or Corsican citron have been planted, but frost injuries have discouraged planting in any but the most frost-free locations. Because of the tendency of the citron to remain in active growth practically throughout the year, it is extremely sensitive to cold injury. Citron growing is still in the experimental stage.

Tables 1 and 2 show the changes taking place in citrus plantings between 1919 and 1925, according to United States census reports, and Table 3 shows citrus plantings in

Florida up to July 1, 1928.

A recent factor in importance in citrus production is the heavy planting in southern Texas. By July 1, 1928, in the three southern-most counties there had been planted nearly 3,500,000 citrus trees, of which about 2,500,000 are grapefruit. Only about one-quarter of these trees are of bearing age. Additional plantings have also been made in recent years in the Laredo and Winter Garden areas.

(To be Continued)

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Western Part of Florida Released from Fruit Fly Quarantine Restrictions

The Secretary of Agriculture announced on February 21 the release of what is known as "West Florida" from the restrictions as to the movement of host fruits and vegetables which apply to the remainder of the State of Florida on account of the Mediterranean fruit fly.

The area so released constitutes all that part of the State lying west of the Ocklockonee River and embracing the counties of Walton, Okaloosa, Santa Rosa, Escambia, Bay, Washington, Holmes, Gulf, Calhoun, Jackson, Franklin, Liberty, and Gadsden. This part of Florida produces Satsumas, blueberries, and in addition there are smaller scattered plantings of peaches, plums, grapes, pears and other fruits. There is no commercial production of host vegetables in the region.

West Florida has been thoroughly inspected repeatedly and no Mediterranean fruit fly infestations have been found within it at any time. The first intensive inspection was made between May 13 and July 8, 1929, during a period when peaches, figs, grapes, pears, plums, blueberries, mulberries, and blackberries were ripe or ripening, and the inspection of the different localities was so timed as to make the inspections when the leading host fruits of that section were maturing or matured. Citrus trees, largely Satsumas, to the number of nearly 200,000 were found on 1,204 different properties, and 618,209 fruit trees of other varieties were found on 3,318 different properties.

A second inspection of this area began the latter part of August and continued until well into October. More recently a third series of inspections was made throughout this area, which indicated continued absence of infestation.

In the meantime, the West Florida area has received exactly the same quarantine protection against the peninsular section of the State as have Alabama, Georgia, and other Southern States. Road stations were established in May on the Ocklockonee River, and have been maintained ever since. Compliance with the requirements on the part of the boat lines and railroads operating between other Florida points and West Florida has been enforced by inspectors

of the State Plant Board in cooperation with the United States Department of Agriculture.

The Department of Agriculture therefore feels that the western section of Florida is in the same status as to the possibility of being infested with the Mediterranean fruit fly as are other Southern States, and, that in the absence of any evidence of infestation within the area, quarantine restrictions can justifiably be removed.

Provision is made in the new order under which the same prompt suppressive action can be taken in that part of the State as in the remainder should any fruit fly infestation be discovered there.

ADDITIONAL METHOD OF STERILIZING FLORIDA CITRUS FRUIT BY REFRIGERATION APPROVED BY DEPARTMENT OF AGRICULTURE

The United States Department of Agriculture issued an order recently under which Florida citrus fruits may be sterilized by refrigeration at a temperature not quite so low as has been employed in the past. The period for such treatment is, however, lengthened. Heretofore, fruit treated by the cold sterilization method has been required to be cooled to a temperature of 28 degrees F., and held at that temperature for five hours, after which it is kept at a temperature of 30 degrees F. for a period of five days. Further experimental work has shown that the same results can be accomplished by holding the citrus in cold storage for a fifteen-day period at a temperature of from 30 degrees to 31 degrees F. This latter treatment

is now approved and may, if preferred, be used instead of the former method either in the regulated areas of Florida or at designated cold storages approved by the Plant Quarantine and Control Administration in northern and central States.

Sterilization is, in all cases, carried out under the supervision of the Department of Agriculture.

MAMMOTH PRIZE FIGHTER IS FRUIT, VEGETABLE EATER

New York.—Primo Carnera, the largest pugilist in the world, is a great booster of fruits and vegetables. As a matter of fact, he is a great booster of all foods, as his tremendous appetite attests, but he is particularly partial to fresh produce. For breakfast he has two or three grapefruit and a wash-basinful of fruit salad, together with a large steak. His only other meal of the day consists of two or three more grapefruit, a double omelet consisting of six eggs each, some more fruit salad, comprising mixed oranges, apples and bananas, laid out on an elephant's ear of lettuce, and a tremendous supply of all the vegetables in sight. Canera is six feet eight inches tall and weighs 289 pounds.

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Clean Up Groves, Destroy Heavy Crop of Aphids

Station Entomologist Says Spray, Dust, and Push Growth to Beat The Pest

"The green citrus aphid is much more abundant in groves in the citrus belt than it was at this time a year ago and the growth is not as far along," according to J. R. Watson, entomologist with the Florida Experiment Station. "Whether or not we will have a heavy infestation of aphids the coming season will depend very much on the weather for the next few weeks. If the weather should turn up very warm so that the growth and bloom on citrus comes out rapidly there will be less damage done by aphids than if the weather remains cool or dry and the growth comes out slowly. In the latter event the grove will probably suffer severely from aphid attack but in all events it is very important that the grower forestall this possible damage by cleaning up the groves at the present time. At this time not over ten percent of the trees in the groves, even among the young trees,

are commonly infested and it would be a comparatively inexpensive operation to clean up groves thoroughly.

"Where the growth is confined to the tips of slender branches which can readily be dipped into a bucket of insecticide, the most economical method of combatting the aphids would be to go through the groves with a bucket containing a good strong solution of tobacco, derris or pyrethrum extract and dip the twigs into this.

"On trees where the growth is coming out along the larger limbs which cannot readily be bent into a bucket by all means the most thorough method of aphid control is to dust under a tent. A tent which will answer for a tree from one to four years old can be made for from one to four dollars. All that is necessary is to stretch some muslin over a framework of telephone wire. One-half dozen of these tents will be sufficient to keep two men busy, one moving the tents and the other dusting. During a bright sunshiny day it is only necessary to leave the tent

over a tree a minute. The trees should be dusted with nicotine sulphate-lime dust through a slit in the tent. Average kill under such tents has been 99.6 percent. With the tents one is independent of wind.

"If groves are cleaned up at this time they should be able to get through the blooming period without serious damage. Aphids will not fly around much from one grove to another until about the middle of March. If aphids are allowed to attack the new growth, normal development of the new buds will be prevented, including any blossoms and fruit on it, and the leaves badly curled. These curled leaves furnish excellent hiding places for purple scale. In these curled leaves the scale is difficult to reach with a spray solution and recent observations by the entomologist at Citrus Sub-station show that the scales in these curled leaves are much less liable to attack by entomogenous fungi than are scales in the open. Aphids should not be allowed to cause this damage to young trees.

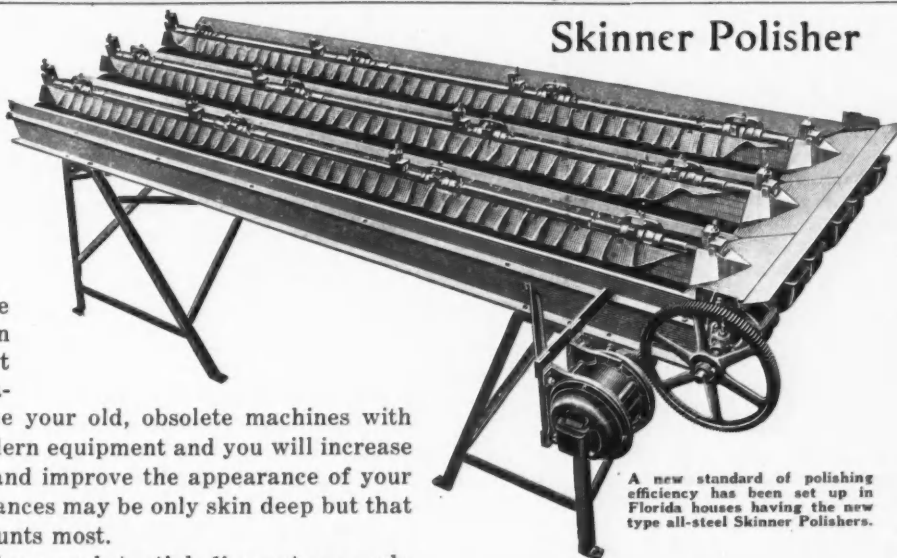
"Since we have never had a severe freeze after the 10th of February it should now be safe for the growers to push their young growth by fertilization and cultivation."

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Striking Increase In Exports Of Fresh Fruit From United States

Value of shipments in five-year period, 1923-1927, nearly doubles, Commerce Department bulletin shows. Apples account for bulk of trade with Oranges following

The increasing popularity of fresh fruit throughout the world is indicated in a comprehensive analysis of foreign trade just issued by the Commerce Department. This study which was made by D. J. Moriarty of the Foodstuffs Division shows that during the five-year period from 1923 to 1927, the value of fresh fruit shipments from this country almost doubled, rising from \$33,000,000 to \$60,000,000. In 1928 there was a decline of approximately \$4,000,000 in this trade, due to short apple and citrus fruit crops in 1927 and an accelerated domestic demand.

Apples as might be expected account for the bulk of our fresh fruit export trade, having a value of \$27,000,000 in 1928 while oranges followed with a value of \$14,000,000. The United States is by far the world's chief exporter of apples while the United Kingdom is the leading importer. Of the 1,829,000 barrels shipped from the United States in 1928, British importers took more than 60 per cent while the same interests bought 43 per cent of the 8,149,000 boxes exported from this country. Other important foreign markets for American apples include Germany, Netherlands, Canada, Argentina, Brazil, Sweden, Denmark, Philippine Islands and Mexico.

The principal competition which American apples have to meet in British markets, the survey points out, comes from Canadian fruit which is exported from October to March, the same period when United States apples move in heaviest volume. Aside from this competition American apples have to meet the competition of Spanish oranges which arrive in the United Kingdom during this period.

While Spain is the largest exporter of oranges, shipments abroad of this fruit from the United States have been steadily rising. As in the case of apples, exports were lower in 1928 than during the preceding year. Canada has been our chief export market for several years, taking in 1928 a-

bout 85 per cent of the 2,677,000 boxes shipped.

Referring to grapefruit, the survey shows that the popularity of this typically American fruit is growing steadily in the United Kingdom, aided to a considerable extent by the "Eat more fruit" campaign being conducted by British importers. Of the 679,000 boxes of grapefruit valued at \$2,900,000 exported from the United States in 1928, nearly 60 per cent went to the United Kingdom.

Canada is also an important outlet, taking 38 per cent in the same year. Approximately one-third of United States grapefruit exports, according to the survey, originate in Porto Rico, being transshipped from New York.

Besides apples, oranges, and grapefruit, the survey shows that exports of other fruits during 1928 were valued as follows: Pears, \$4,100,000; grapes, \$2,500,000; berries, \$1,430,000; lemons, \$1,430,000; peaches \$730,000; and pineapples \$146,000.

THE CAUSE AND CONTROL OF CITRUS SCAB

Continued from Page 8
lemon trees that frequently occur in groves carry the disease and serve as sources of infection. Such trees should be either removed or worked

PRE-COOLING WITH BROGDEX

Packers equipped with pre-coolers may pre-cool and use Brogdex at less cost per car than to pre-cool and initial ice.

The fruit is pre-cooled and loaded into a dry car without ice and shipped to market with instructions to remove the plugs in five or six days. The cost is the pre-cooling plus \$21.60 for Brogdex.

The cost of pre-cooling and initial icing is the pre-cooling plus \$12.00 bunker charge plus 4 tons of ice at \$5.00 a ton or a total of \$32.00.

In other words the installation of Brogdex by the owner of a pre-cooler makes him a net profit of \$10.40 on every car he ships. He gets all of the benefits of Brogdex without really paying anything for them. At the same time the dealer enjoys the advantages of the better keeping qualities of Brogdexed fruit after he gets it.

Instead of Brogdex adding to the cost of marketing, as some packers seem to think, in reality it greatly reduces that cost and in addition helps the carrying quality, improves the appearance and stops decay and shrinkage losses in the dealer's hands.

Florida Brogdex Distributors, Inc.

B. C. Skinner, Pres.

Dunedin, Florida

over to commercial citrus varieties. Sour orange and rough lemon sprouts from the stocks on which the trees were propagated should be cut off whenever they appear.

BBRITISH ORANGE MARKET DEPRESSED

Prices paid for oranges in Liverpool and London have been very low this season because of the large supplies of low grade immature Spanish fruit on these markets. Prices have been as low as \$1.58 to \$2.19 per one-half case of 110 pounds. This would be equivalent to \$1.00 to \$1.40 on a 70 pound basis. The arrivals of oranges in November and December into the United Kingdom amounted to 3,000,000 boxes (70 pound basis) as compared with 2,000,000 last year and 3,150,000 the year previous. Spanish imports accounted for over 80 per cent of these on the average with Palestine supplying around 10 per cent and Italy and the United States most of the remainder.

EXTENSION WORKERS TO CONFER WITH FARM BOARD

The Extension Services of the various states are recognized by the Federal Farm Board as one of the best groups of agricultural workers through which they will attempt to reach the farmer, according to A. P. Spencer, vice-director of the Florida Agricultural Extension Division. The Division plans to hold two conferences in the state where representatives from the Farm Board and the extension workers will discuss plans for a proper understanding between the Board and the farmer.

BOYS' CLUB SPECIALIST IS VISITING FLORIDA

I. W. Hill, extension specialist in boy's club work with the U. S. Department of Agriculture, has been spending some time here cooperating with R. W. Blacklock, state boys' club agent, in organizing 4-H plans for 1930. He commented very favorably on the boys club exhibits at the South Florida Fair, staged by R. W. Blacklock and the county agents in the corn growing sections of the state.

U. S. HEALTH SPECIALIST TAKES REST IN FLORIDA

Miss Miriam Birdseye, extension nutritionist with the U. S. Department of Agriculture, has come to Florida, home of the healthiest club girl, to spend a four months vacation. She has decided to try the actual S. O. S. health practice of 4-H clubs; Sunshine, Oranges, Surf.

WAKE UP *those* Sleepy Citrus Trees

YOUR citrus trees are apt to get lazy. A heavy bloom is only half their job. Don't let them loaf along. Set the bloom and stick the crop with Chilean Nitrate of Soda. Its quick-acting nitrogen is the plant food needed to make sure of a good profitable yield.

And you'll find the best market prices are paid for fruits grown with Chilean Nitrate. Its nitrogen is available at once—goes right to work. It gives trees strength. Fruit is larger, matures early and ships better. Higher sugar content, too.

Chilean Nitrate is the natural nitrate fertilizer—not synthetic or artificial. It contains all the elements that nature gave it, including iodine.

The Lake Alfred Experiment Station has developed convincing proof of the value of Chilean Nitrate on citrus. It is well worth your while to visit this station to see for yourself.

FREE Fertilizer Book

A new book, "How to Fertilize Citrus in Florida," tells how you can make citrus trees pay greater profits. Ask for Book No. 7, or tear out this ad and mail with your name and address.

Chilean Nitrate of Soda EDUCATIONAL BUREAU



Orlando Bank & Trust Bldg., Orlando, Florida

In writing please refer to Ad No. 25-I

Railroads Cancel Tariff Which Shippers Had Suspended

Railroads have cancelled effective February 20th, Supplements to Class Rate Tariffs published in November 1929, which proposed to make the routings which the shippers would have to use the same as the routings published in commodity rate tariffs for vegetables from Florida. This would have had the effect of forcing shippers to pay the commodity rates which on various light weight vegetables are considerably more than the class rates.

The Growers and Shippers League of Florida and others, including the Railroad Commission, State of Florida, asked the Interstate Commerce Commission to suspend the supplements, which was granted, and hearing was set for Eustis, February 17th. On February 10th the Commission advised the Growers and Shippers League that the hearing had been cancelled.

The action of the carriers in cancelling the use of the lower class rates and forcing the use of the higher commodity rates would have cost the shippers of Florida this season hundreds of thousands of dollars, because the commodity rates on the lighter weight vegetables are so much higher than the class rates.

At the hearing held in Eustis, February 17th, 18th and 19th in the Line Haul Rate Case on vegetables, it was shown by the carriers that on shipped from Florida during 1928-29 season, only, including those originating on the Atlantic Coast Line, Seaboard Air Line and those cars that originated on the Florida East Coast Railway, and which were delivered to the Atlantic Coast Line or Seaboard Air Line, that the difference between the earnings under present commodity rates and the earnings under class rates on 31,255 cars shipped during 1928-29 season amounted to \$563,730.00. The amount of reduction which the shippers are seeking in their Line Haul Rate Case on vegetables below the freight charges during 1928-29 would amount on the 31,255 cars to \$2,697,221.00.

IMPRESSIONS

Continued from page 10

But generally humor is lacking. The growers who daily have crowded this big room are too vitally concerned in the outcome to permit humor to come to the surface. Conjecture

as to that outcome is at this writing extremely difficult. The first five witnesses doubtless were the hardest, the last ninety five will probably most affect the result. However it is our impression, and this guess might well enough have been made before the committee left Washington, that there will be a sufficient appropriation to provide for inspection through the summer; that there will be enough money to enable the fly forces to function as a sort of fire department when, as and if necessary; that out of all the turmoil and the bickerings as between extremists of two schools of thought we shall be

guided onto a safe middle ground on which Florida may travel sanely to emerge before long from that "slough of despond" into which we were plunged without warning about ten months ago.

FORTY CROP CHAMPIONS

MAKE TOUR OF FLORIDA

Forty Crop Champions representing 10 southern states were the guest of the Chilean Nitrate of Soda Educational Bureau on a recent tour through Florida. They arrived in Tampa from New Orleans and continuing their trip visited the Mountain Lake Sanctuary at Lake Wales, the Citrus Experiment Station at Lake Alfred, Orlando, Daytona Beach, St. Augustine, and Jacksonville.

Many Floridians cooperated in arranging the tour and making it as educational as possible.

CLASSIFIED

Advertisements

The rate for advertisements of this nature is only five cents per word for each insertion. You may count the number of words you have, multiply it by five, and you will have the cost of the advertisement for one insertion. Multiply this by the total number of insertions desired and you will have the total cost. This rate is so low that we cannot charge classified accounts, and would, therefore, appreciate a remittance with order. No advertisement accepted for less than 50 cents.

REAL ESTATE

FOR SALE—By owner, eighty acres, two-year-old best looking grove at reasonable price. Howey-in-the-Hills. For further information write "A. Z." P. O. Box 1261, Orlando, Florida.

FOR SALE—Pineapple land in winterless Florida. \$15 an acre. Almont Ake, Venus, Fla.

WANT TO SELL HALF INTEREST IN FIFTEEN ACRE SATSUMA BEARING GROVE ON HIGHWAY NEAR PANAMA CITY, ROBT. LAMBERT, OWNER, FOUNTAIN, FLA.

SATSUMA RUDWOOD from Bearing Trees. Hills Fruit Farm, Panama City, Fla.

WANTED to hear from owner having good farm for sale. Cash Price, particulars. John Black, Chippewa Falls, Wisconsin.

MISCELLANEOUS

RAISE PIGEONS—Profit and pleasure. Illustrated descriptive catalogue postage six cents. Vrana Farms, Box 3144, Clayton, Missouri.

TUNG OIL TREES—Cluster variety, Vigorous. Forty cents each. Lots of hundred 50 cents each. Hunt Bros., Inc., Lake Wales, Fla.

FOR SALE: Splendid bearing citrus grove in Lee County, far removed from Fruit Fly infestation. Will produce 20,000 boxes coming season. If you want this grove address P. O. Box 295, Fort Myers, Fla.

HIGH BLOOD PRESSURE easily, inexpensively overcome, without drugs. Send address. Dr. J. B. Stokes, Mohawk, Fla.

PUREBRED PULLETS FOR SALE—White Leghorns and Anconas ready to ship. Barred Rocks and R. I. Reds shortly. Several hundred yearling White Leghorn hens now laying 70%. Write or wire for prices. C. A. Norman, Dr. 1440, Knoxville, Tenn.


LAREDO SOY BEANS, considered free from nematode, excellent for hay and soil improvement. Write the Baldwin County Seed Growers Association, Loxley, Alabama, for prices.

AVOCADOS - SEED — Grafted. Reliable bearers only. John B. Beach, West Palm Beach, Florida.

WANTED—To hear from owner of land for sale. O. Hawley, Baldwin, Wis.

Orders-Inquiries

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